Paris, Henry B.
A REPORT TO THE INTERNATIONAL FEDERATION OF LIBRARY ASSOCIATIONS REGARDING EUROPEAN CONFERENCE OF DIRECTORS OF BRAILLE...

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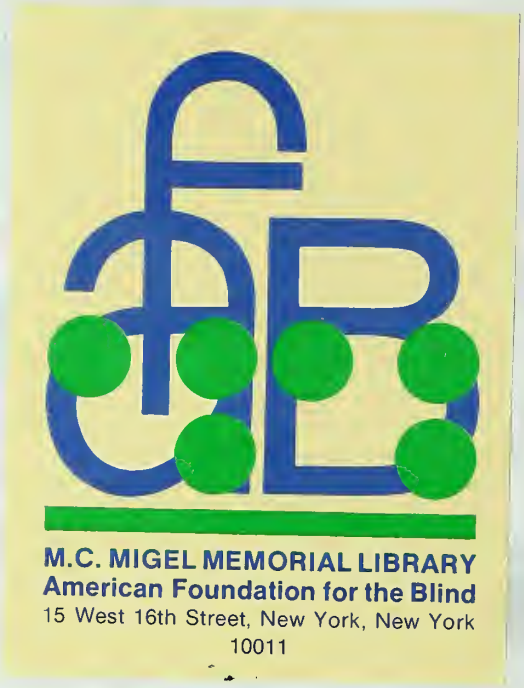
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A Report to the
International Federation of Library Associations
regarding

EUROPEAN CONFERENCE OF DIRECTORS OF BRAILLE PRINTING HOUSES AND BRAILLE LIBRARIES
MADRID, SPAIN
APRIL 11-13, 1978

by

HENRY B. PARIS
ASSISTANT CHIEF FOR MATERIALS DEVELOPMENT

June 14, 1978

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The European Conference of Directors of Braille Printing Houses and Braille Libraries was held in Madrid, April 11-13, 1978. The conference was sponsored by the World Council for the Welfare of the Blind, European Regional Committee.

The first order of business was the introduction of the newly elected Chairman of the Cultural Committee and of the Conference, Pedro A. Zurita of the Spanish National Organization for the Blind. Seven authorities in the field of library service and braille and recorded books presented research papers on a variety of topics. Presentations were followed by panel discussions and debates.

New Criteria for Transcribing

In his paper "From Inkprint Book to the Braille Book: Difficulties of the Process," Antonio Maso Simon of Spain analyzed the physiological and psychological differences between sight reading and tactile reading.

His major premise was that "whereas sight is synthetic and global, touch is analytical and sequential, and, therefore, these senses are opposite in behavior. These circumstances imply the existence of various features which differ in both senses: sight totalizes and integrates. Touch, on the other hand, individualizes and disintegrates. Sight has a second analytical stage, in which it concentrates its attention on the different parts, and touch, on the contrary, is not able to synthesize by itself but only with the help of imagination and memory. Sight perceives the whole, and appreciates in it forms, sizes

and colours, whereas touch only distinguishes those forms and sizes which are sequentially perceived by the fingertips in movement. Sight has an extensive and varied series of sensibles which produce a very complete sensation, rich in nuances and remote, and touch is more limited, much poorer in nuances and needs direct contact, and lastly, sight has a very wide sensory horizon, apprehends space and perspective; whereas touch has a sensory horizon and spatial perception limited to the environment the hands can reach, is sequential, and does not apprehend perspective.

"The features . . . mentioned clearly show that, in connection with reading, graphic information, and book resources in general, sight gives a quantity and quality of information far superior to that furnished by touch, and that there are means and procedures in inkprint books which are essentially visual, and which, if they are transcribed into braille with the same form in which they appear there, their purpose is betrayed and, if we adapt them to tactile characteristics, their aim is not fulfilled either. Synoptic and other types of tables are a clear example of this."

To make braille a more effective means of communication, Mr. Masó Simón established some basic criteria as general guidelines in the transcription of graphics and other displayed matter in print. His criteria were as follows:

"1. All pictures, photographs or drawings of a figurative nature should be eliminated because, even if they are capable of reproduction with dots, they are inaccessible to touch and, however simple they might seem, they are difficult to identify. Touch, on

account of its inability to appreciate perspective, cannot discriminate forms in a bi-dimensional representation.

"2. When pictures are eliminated one should consider whether their omission significantly affects the contents of the book. If so, they should be substituted by their corresponding caption when it is explicit enough, or by a textual explanation.

"3. Geometric drawings, diagrams and graphs, which are usually the basis of a mathematical or scientific demonstration should be made with dots and they should comply with the following conditions:

a) That braille embossed reproduction should be technically possible.

b) That such reproduction should be perfectly understandable by touch, and

c) If the figure is very complex, before its transcription someone with sufficient experience should simplify it to the limit by eliminating unrelevant auxiliary lines or he should adapt it without detriment to the demonstration.

"4. Figures should be placed in the braille book as near as possible to the theorem or problem they illustrate or for the demonstration of which they are the basis.

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"5. With regard to diagrams, organigrams, tables with keys or the like, developed formulae for Organic Chemistry, tree structures, synoptic tables, etc., a similar criterion as indicated for geometric figures or graphs should be followed. Their possibilities for embossed reproduction and their ability to be understood by touch should be carefully studied and if necessary, they should be adapted by an expert. When tables and diagrams, etc., are too complex and difficult to be transcribed or understood, it is better to reproduce them horizontally and sequentially, as this is more in accordance with tactile possibilities.

"In order to apply these criteria we have just specified adequately, it is first necessary to carry out a thorough study of the inkprint book so as to eliminate, adapt or transcribe the visual means it contains, this study should be made by suitably qualified people with a good knowledge of the subject of the book, with a mastery of the possibilities of braille transcription and with good teaching experience. This team should consist of both sighted and blind people. The book-editing team has to work in close cooperation with the printing house or better still, it should consist of members of the braille works staff in order to ensure perfect functioning."

Mr. Masó Simón noted that acceptance of these criteria varied according to the concept of blindness, which he categorized as follows:

"1. Sightism. Those who maintain this position believe that braille should be an exact copy, a very accurate

transcription from the inkprint book, containing the graphic information, reflecting the typographic resources and omitting exclusively those prints, tables or typographic resources, which are clearly impcssible to be transcribed on technical grounds.

"The defenders of this position think the apprehension possibilities of touch are in a way equal to those of sight because the visual sensibles that touch does not perceive can be replaced, so they believe, by imagination and intelligence. They hold the view that touch can even apprehend perspective with a period of training.

"2. Blindism. The defenders of this position believe that textbooks should be made specially for the blind, taking into consideration the resources of the braille system and the informative potentials of touch, since inkprint books, especially textbooks, are planned having in mind exclusively visual information. The fight against verbalism has led to the opposite extreme, that is, intuitionism, and the enormous abundance of visual means makes textbooks almost intranscribable, above all, those prepared for the first grades of elementary education where there is a minimal amount of written text and graphic information occupies almost the entire book.

"3. Eclectic position. This is a midway position, belonging

to those who consider that many texts cannot be transcribed exactly in the same way as they have been conceived, not only for reasons of technical impossibility but for the fact that they would prove inadequate and of very little use. However, if we make special textbooks for the blind this would imply a greater isolation from the surrounding world, acting against the necessary socializing nature of culture. Thus, for example, a blind person will never be able to verify that snow is white and blood is red, but he has to know it.

"The defenders of this eclectic position believe that inkprint books should be previously or simultaneously adapted for transcription into braille, eliminating those drawings unsuitable or impossible for touch, simplifying those which can be simplified for better interpretation, replacing where necessary visual means by adequate written information, giving the synoptic tables, diagrams, tables, etc. the most accessible form for touch and in a word, showing only those typographic resources which are really meaningful.

"The three alternatives given serve to some extent as a corollary to the problems presented above, problems which offer us a wide range of subjects for mediation which . . . if critically contrasted in an open and constructive debate, will no doubt lead us to adopt the appropriate agreements and make the necessary recommendations for reaching valid solutions."

Braille Cassettes and Braille Cassette Players

In his "Use of Modern Equipment for Storing and Reading Braille Script as well as Establishment of National Data Carrier Centers," Rudolf Nicolussi of the Federal Republic of Germany described the following cassette braille machines:

1. The French Digicassette designed by Oleg Tretiakoff and produced by the French-American company Elinfa.
2. The German Braillex designed by Professor Boldt and produced by Papenmeier.

Both these devices offer magnetic cassette storage of braille in a microprocessor-based machine which uses an electromechanical volatile braille readout device. Both are capable of combined braille and audio output and are compatible computer terminal devices, but they serve different functions.

The Braillex is basically more complex than the Digicassette. It has random access and indexing features requiring special indexing information to be coded on the cassette with the text information. It is superbly applicable to encyclopedias, dictionaries, legal references, etc., and has numerous applications in research and reference. It is approximately the size of a standard electric typewriter and costs about 10,000 Deutsche mark ($4 to $5 thousand).

The Digicassette is more compact and is basically designed for note-taking and book-reading. Models selling for up to $2,500 range from a simple book-reading machine to a full read-write computer terminal device.

Dr. Nicolussi emphasized that the usefulness of braille machines would depend on the publication of up-to-date literature in magnetic storage form. He examined the problems of braille cassette production and storage and considered the following solutions:

"1. The existing Braille publishers take charge of the production of Braille-cassettes.

"2. The producers of the reading-devices undertake the production of Braille-cassettes too.

"3. The associations of the blind become responsible for the data-storage media centers, being financed mainly by public authorities and producing, independent of financial interests, a stock of Braille-cassettes exclusively orientated to the many-sided requirements of the users.

In Dr. Nicolussi's opinion, none of the solutions mentioned would be acceptable to all countries, since each had reached a different level of braille technology. These differences notwithstanding, he concluded that in all future discussions of these problems, the following requirements were fundamental:

"a) There must be a guarantee that the data-storage media centers [remain] independent of economical ambitions and . . . utilize the new technical possibilities to the utmost.

"b) Braille-cassettes must be offered as well for a reasonable price or as a loan.

"c) The offer must be many-sided, taking into consideration the need for knowledge and learning, as well as for entertainment.

"d) A possible lending of Braille-cassettes belongs absolutely [within] the competence of the Braille-lending libraries if the data-storage media centers do not pursue it themselves.

"e) It is very important to choose the right way already at the present moment to make sure that the new technical development enabling Braille-text to be stored on a minimum of space brings all possible advantages for the users. To take care of that is not only the task of the World Council, but even their duty."

The panel assembled to discuss Dr. Nicolussi's paper consisted of Mr. Tretiakoff (Digicassette), Dr. Boldt (Braillex), and Mr. Vito Proscia (Telesensory Systems). Mr. Proscia described a third machine similar to the Digicassette. The chairman indicated that too much competition in the development of comparable machines might not benefit blind users; however, this subject was not debated due to lack of time, and the meeting was adjourned to allow delegates to visit exhibits of the Digicassette, the Braillex, a computer simulation of the Telesensory machine, a Brailink machine produced by Clarke and Smith of England, and a Braillocord machine produced by AID Electronics of Germany.

Computer-Produced Braille

In his "Report on Experiences about Modern Printing Techniques under Consideration of Traditional Methods," Pierre Schneider-Maunoury, secretary-general of the Association Valentin Hauy of France, described the introduction of computer technology in the production of traditional paper braille.

The Association Valentin Hauy has financed the development of the Digicassette and under Mr. Schneider-Maunoury's direction has taken a lead in exploring new technologies in braille production.

Mr. Schneider-Maunoury described French developments that have paralleled developments in the United States. Sighted persons who cannot read braille can now transcribe print to braille. Using a computer terminal they enter plain text language in a computer which converts it either to grade 1 (uncontracted) or to grade 2 (contracted) braille. The computer can then be used to generate outputs to various devices which produce braille pages or metal embossing plates. Clovernook Printing House in Cincinnati, Ohio, probably uses the most advanced form of this technique. Their high-speed metal-plate embossers, currently the fastest available, were developed by Triformation Systems under contract to the Library of Congress (U.S.A.).

Subsequent discussion indicated that the state of the art in this area was about as advanced in the United States as in any other country.

Computer-Aided Translation System

Ernest Grandjean of France described the application of the PIAF System to translation and editing contracted braille from print text input. Instead of discussing his paper "Computer Aided Processing for Natural Languages (PIAF System)," a detailed description of the system, he compared its unique features with other braille programs.

Unlike other braille translation programs, Mr. Grandjean's system can be adapted to more than one spoken language. The programmer prepares a general interactive program which contains separate dictionaries for each language required. When the computer encounters a difficulty in the translation, it announces the problem to the terminal operator and supplies the known alternatives. The operator makes the hard decisions, and the computer returns to the automatic translation mode.

Thus far dictionaries have only been constructed for French, and the program has apparently not demonstrated any greater capability than similar translation programs. The preparation of the dictionary appears to be the major problem in any translation program.

Dr. John Gill, Warwick University, England; Mlle Monique Truquet, Toulouse University, France; and Dr. Van Vliet, Netherlands Library for the Blind, participated in a panel discussion, each presenting a braille translation system. Dr. Gill noted that there has been some success using the latest types of computer-edited compositors' tapes from publishing houses as a direct input to a braille translation program. Dr. Van Vliet indicated that he has published thirty braille books from compositors' tapes. The old method of correcting compositors' tapes

left the tapes with too many errors and too much superfluous data to be useful; however, new methods were providing much cleaner tapes. Dr. Gill also described an interactive system he is developing for translating materials. It is a hybrid system which is automatic for literal text translation and interactive for math.

Mademoiselle Truquet's system has translated sixteen books (13,000 pages) since 1976. Her automatic translator produces books with approximately one-fourth the errors of a manual translation.

Dr. Van Vliet described the computer braille translator with which he is working and observed that the variations in braille contraction rules between countries make translation considerably more difficult in some languages than in others.

All the systems discussed used sighted terminal operators to enter the print text in the computer translator, and they printed output on LED 120 braille teletype machines. So far none can use a high-speed zinc-plate embosser like the machine supplied by the Library of Congress for the Clovernook Printing House system.

The German printing houses are producing more grade 1 braille and less contracted braille, and they have increased their readership as a result.

Dr. Gill indicated a need for a braille code between grade 1 and grade 2 which he would call "grade 1.5." His English braille translator has a dictionary of 750 contractions, 100 of which have never been used in 1.7 million words of translation.

Finally, there was a discussion of translation of music into

braille. According to Dr. Gill, there are approximately six teams working on special music programs. The universities of Warwick and Toulouse were planning to have music translators operative by the end of 1978.

Innovations in Library Service

In his "Effective Forms and Methods of Lending Literature in Braille and on Sound Carriers," Vojtech Omasta of Czechoslovakia stated:

"Scientific and technical development has notably increased in the last few decades. There is talk of the penetration of the scientific-technical revolution in all countries of the world and in all spheres of human life, including the new devices and aids for the blind and visually impaired. We, the directors of printing houses and libraries for the blind, have the responsibility of taking immediate and full advantage, in our work, of the results of the rapid growth of this modernization and technical development.

"The organization of Braille libraries, of recorded literature, and of books, magazines and manuals in large print for the partially sighted need not be isolated from the general development. Also in this same aspect it is necessary to search for new ways, new work methods, inasmuch as both the blind and visually impaired represent at the present time a significant factor, which must be integrated, as an important part of society and state in normal life.

"The historical development of libraries for the blind has not been, of course, identical in all countries of the world. It has suffered the influence of a great number of factors, among which we might mention

as most important the constitution and the system of distribution of state wealth, secondly, social conditions, and finally, the manner of providing financial means, whether from charity organizations or from state allotments, as is the case in the more progressive societies.

"There are, in essence, three types of libraries:

1. The library united with the printing house for the blind on the same premises.
2. The library as an isolated unit, independent in its organization and financial matters.
3. The library included in the system of public libraries.

"The most frequent of these three types is the first: the functioning of the library is directly linked with that of the printing house for the blind. This system has its advantages and its disadvantages. The advantages have to do with the common objectives of the two services, the possibility of immediate collaboration between the two and the close contact which is established with the production system. The disadvantages arise from the insufficiency of available space, which offers few possibilities for expansion of the services, and from the dependance of the library's administration, whose development is subordinate to that of the production techniques of the printing house.

"The independent library, in this sense, is in a much more advantageous situation. It is free from the problems of the production of literature for the blind and from the worries arising from them. It has its own financial base and must take care of only its own development

goals. It is a system which is in accordance with the modern conception and which is likely to become in the near future the most common system.

"The lending libraries integrated within the system of normal public libraries should be considered only as a complement to the above-mentioned systems, and will need to be converted preferably into branches of the libraries in regional capitals. These branches are more easily accessible to readers and relieve the postal services of an enormous burden as regards the sending of Braille books and talking books. This type of library constitutes as well a new form of development which sooner or later will become a supplement to the services of a central library. It is also to be expected that these branches plant the seeds for future social centers for the visually impaired. These centers will be able to establish small recording studios, communication and technical assistance services, services for aid to students from all kinds of education centers, and when the time comes they will be converted into centers for the use of computers in the system of data processing.

"The equipment of the libraries is, save for a few exceptions, out-dated. In them we find various types of simple shelves in total or almost complete absence of mechanization. The reference system of the Braille and talking books is carried out in the majority of cases by way of a simple system of cataloguing, inasmuch as the number is not too large and its ordering is rather simple. This is another aspect towards which we should direct our efforts in order to obtain total technification. The type of materials available for lending is well known. These materials are books and magazines in Braille, records, books and magazines on tape,

radio plays, large print books and magazines for the partially sighted, informative materials of all types, including translations of sister magazines from all over the world, brief reports on research, musical scores in ink print and Braille, text books on tape for secondary schools and universities, and a small collection of ink print books.

"The volume of production increases continually. Printing houses for the blind will be supplied with modern systems of computerized transcription, rotary presses, automatic presses and sophisticated techniques of book binding. At the present time the recording studios increase the production of books on tape, the number of copies on open reel tape and cassettes is multiplied, and the number of blind and visually impaired students in upper level education centers increases. The growth of activity in a specific area, in production for example, implies the appearance of a greater need for improvement in the reference and cataloguing systems and in the lending systems. One of the aspects in which it is possible to imagine modernization is in the possibilities of mobility of the book shelves. It is necessary to eliminate the complicated search for desired books and materials as well as the useless movement from one shelf to another. The equipment in Braille libraries differs undoubtedly from that of talking book libraries. Braille books take up considerably more space and are rather heavy, which causes the lending process to be much slower. How can we resolve these problems? The shelves will be placed one after another in modular form without intermediate passageways. Each one will have its own transportation system and will be electrically movable, controlled from a central control board.

This control board will be located as close as possible to where direct contact with the readers takes place. The numbers on the control board for the shelves will correspond to the catalogue reference numbers.

"In the case of the talking book library, including records and radio plays, the problem will be resolved in a different way. In the majority of cases there will be an area exclusively set aside for this purpose. Here also there will be a control board, but the shelves will adopt the form of a continuous ellipsoidal moving band. In the first place the desired title will be sought, and then by way of a button the movement of the band will be ordered to carry the shelves until the corresponding point is found, in which position the movable wall will stop. At this point it will be extremely simple to find the book. It is possible also to incorporate the reference system of the books in a computer, which will also be used for the automatic printing of Braille and ink print.

"The storing of information of all kinds, the translations made from specialized journals for the blind in Braille or in ink print, as well as other translations that the research service may have been able to obtain, are carried out much better with the help of the computer and its very extensive memory. Musical scores in Braille should also be supplemented by the corresponding version in ink print and on tape and the three variants will be filed in one single container.

"The existing systems strongly depend on the development which has taken place up to now in the lending services for visually impaired readers and their range of application is of a limited scope. Most of

their activity takes place in the central library and consists of two fundamental procedures. First, the readers who live in the town where the library is located go to the library personally or send some family member to pick up the material for them. Those who live in different cities use the postal service and order by mail the literature that they wish to receive. The library makes sure that they receive the requested volumes. This system, which is the one most frequently used, is advantageous for both parties and will continue in effect for many years to come, although in some of the very advanced countries new alternatives have begun to appear. These alternatives are, in the case of large cities, the transportation in vehicles belonging to the institution, of the books to the home of the reader and especially to elderly blind people.

"For this purpose in large cities district branches of the libraries are opened. They are very adequate for this type of collaboration with the readers, inasmuch as in addition to developing other activities and practical services, they create the possibility of more efficiently meeting the needs of the readers, because of a better understanding of their desires. The moving of these branches to industrial centers where a great number of blind and visually impaired people are employed is possible only if the workers reside in the surrounding area of the production site. In this case, the corresponding library actually becomes a branch of the central library while the central library becomes the consultant and provides its branch with the books and materials.

"All libraries have, in addition to their primary task of supplying literature in Braille and on tape to the inhabitants of the

area who are not able to go to the general information centers, another even more appealing mission. They must educate their readers, advise them, widen their horizons through the spoken word, which is as we well know the most effective contact possible. We have in mind conversations which could take place in clubs, lectures, concerts, short plays, literary gatherings and other similar activities, in short, educational and cultural activities. Visually impaired readers show a special interest in this type of social life which also provides them with the possibility of getting to know each other better and of making new friends.

"In this way, the meeting hall, club, gymnasium or sports field is not only a place for social life but can also be a place for informal gatherings. In this way the library workers would be able to see the results of their work in a more efficient manner than that which is provided by analyses carried out by way of questionnaires, no matter how detailed they may be. The services which are provided for the reader in the library itself should be supplemented by reading and study rooms, recording studios and listening booths. The available tables in the rooms should be equipped with modern technical devices in order to facilitate maximum concentration for the student. In these rooms there will be tape players with earphones, optacons, digicassettes, reading aids for the partially sighted and other similar equipment.

"In our work with the readers, we should not forget the need to provide information and reporting in an efficient and regular manner. The most adequate informative medium is the publication of regular supplements to the catalogue, in which the publication of new works should

be announced. In reporting it will be most important to make known the situation of the blind welfare movement on an international level, as well as information about new work methods, aids, new machines, devices, etc. And we should not overlook the efforts which are carried out in order to find creative solutions to our internal problems and difficulties.

"Computer technology and its integration in the library system represents a new and very specific field in the coping with our problems. The minicomputer is already opening the way towards the utilization of automatic production of materials in Braille and on tape and can claim to have produced some very positive and economic results. Taking into account that the computer has a very extensive memory it is also possible to use it in the activity of the circulation of books. Computerized files for books and readers do not constitute the only possibility of application. Computers must also take the responsibility for a much more important task in the creation of an "information memory" and it will be possible to make use of that system, after work hours, by way of a direct telephone or a radio network. Once the corresponding number is dialed the equipment will switch on and will fulfill, according to the order which has been transmitted to it, the required services, for example, a mathematical calculation, or the search for specific data in its memory. Automatic computer printing is already operational, and the use of computer services without the necessity of directly handling them is at this time in a stage of development and will not be long in becoming a reality.

"A new service, which is acquiring increasing success among the other aids for the visually impaired, is radio broadcasting.

"Although it may seem that telephonic connection with the users of this service through a central installation is a matter which corresponds to the telecommunication authorities, we think that a separate organization for this activity would be more efficient and practical. So, I recommend that libraries have available their own system for control of the central installation, which could in addition activate a device with a telephone connection in order to rapidly transmit information concerning new additions to library stock as well as the progress of the blind welfare movement.

"Dear friends, these brief thoughts which I have dedicated to the ways and methods of the functioning of libraries for the blind are by no means an attempt to give a complete view of our problems. My intention has been to give a short look at the present situation and at the new possibilities which are arising, and to provide some suggestions concerning new work methods with and for the readers. We should take advantage of this conference to express in the forthcoming discussion our opinions concerning these matters. If, from this conference, concrete results must be produced, it would be appropriate to examine the following suggestions:

"1. That the European Regional Committee examine the possibility of creating the necessary conditions for the establishment of a center in charge of the systematic reading of all of the journals for the blind, as well as specialized literature from all all over the world for the purpose of sending the

most important articles and news items to all countries.

"2. That a specialized international journal be published concerning the production of written material for the blind, book binding, computer technology, library sciences, etc.

"3. That regular meetings be organized for the directors of libraries and printing houses.

"Finally, I would like to express my desire that we dedicate all of our energy to the strengthening and improvement of our humanitarian mission for the welfare of the blind and visually impaired throughout the world."

Braille Books and Talking Books--Natural Allies

In his "Role of Talking Books and Their Influence on the Demand of Braille Literature," Evgueny Azueen of the USSR analyzed statistics based upon the reading characteristics of blind readers in the Soviet Union.

Mr. Azueen explained that in 1977, libraries for the blind in the Russian Federal Socialist Soviet Republic alone had 1,350,000 books and discs in their collections. More than half this stock consisted of books in braille. In recent years, however, the percentage of braille holdings had been decreasing, while the percentage of talking-books holdings had been on the rise.

Distribution of Book Stocks by
Format and Percentages of Total

Format	1974 Number of copies (thousands)	1974 % in relation to the total	1976 Number of copies (thousands)	1976 % in relation to the total
Braille	1643.5	54.1	1759.9	50.2
Talking Books	810.5	26.6	970.8	27.8
Ink Print	582.6	19.2	703.1	20.0

Source: Azueen, "Role of Talking Books and Their Influence on the Demand of Braille Literature."

In his analysis of these statistics, Mr. Azueen observed that "in two years the number of books in braille has increased 6.5% and that of talking books 7.5%. The increase in the number of books in ordinary print of 21% is due not only to the presence of a certain number of sighted readers but also to the increasing demand from the blind themselves.

"This same pattern can be observed in the analysis of the date concerning the loaning of books in libraries.

"In spite of the increase of the absolute indexes relating to stocks and loaning of braille books, it is possible to see a clear trend towards a decrease in the demand of such books. This undoubtedly influences the number of copies printed in each edition. Taking the 1971 editions of braille books as a basis for comparison, in 1977 they represented 90% and this year they do not exceed 78%."

It was his experience that in the Soviet Union "the period of initial accumulation is rather quick. The basic stock of talking books

has been completed for almost all the branches of knowledge. Its development has started a stage of regular increase of book stocks on the basis of more specific topics within the general subjects. The subject trends will be constantly corrected as methods and quality of recording are improved and with further development of duplication techniques.

"In 1977 the total stock of talking book libraries amounted to 2,200 titles, of which 80% corresponded to fiction, and approximately 20% to literature on Sociology and Politics, text books and scientific books designed for the general public.

"If the recording of talking books amounted to 3,200 hours in 1970, in 1977 it equalled 3,650. These figures show that there is an increase in the production of recorded literature. In terms of edition sheets, the figures just mentioned amount to 4,000 and 4,562.

"Talking books according to the demand from readers are produced in two quantities of copies. The small quantity is equal to 150-170 copies of each title and the large one 250-270. All the books are distributed to libraries for the blind."

Mr. Azueen announced that despite technical difficulties with machines, "the demand of talking books is rapidly increasing. Their mean circulation is eight times larger than that of braille books.

"The recording of books on tape undoubtedly has some advantages. The broadcasting of talking books in special factories for the blind, and the listening of talking books at home which generally becomes a collective reading session of all members of the family, are factors

which have an enormous educative value. The advantage of the talking books is that they are read by great artists, and qualified radio announcers. This produces a great moral and esthetic satisfaction, and increases the emotional and educative effects on man.

"Moreover, recorded books have some advantages in comparison to braille with regard to their weight and size. Talking books can be easily carried and stored.

"The facts are clear. The talking book has had for a long time a leading position. What are the prospects of these two types of books in the world of literature for the blind? Does this imply that a progressive abandonment of braille is taking place?

"In the Soviet Union the talking book has had a great impulse for the last 20 years. Blind people receive tape-recorders at reduced prices or free of charge. The talking book does not require any of the physical or intellectual efforts necessary for the assimilation of braille.

"The talking book has rapidly attracted a great number of visually handicapped persons to reading. The overwhelming majority of these people are invalids of the second group (partially sighted), who do not know braille.

"Statistics show that the increase in the number of blind people is only due to the inclusion of adults who have lost their sight as a consequence of disease or injury, and whose sense of touch is very poor because of their age.

"In the Russian Federal Soviet Socialist Republic out of the 205,000 registered blind people, 43,000 know braille, i.e. 1,900 people

less than in 1974.

"Blindness among children has reached [in the USSR] its lowest record. From 0 to 7 years, it represents 0.2% and from 7 to 16, 2.1%. On the other hand, the number of blind people 60 years and older represents a 46.5% of the total population of registered blind people.

"Most of the schools for the blind have practically become schools for partially sighted.

"All this has directly influenced the readers' demands as far as libraries for the blind are concerned. In 1977, out of the 143,000 readers (of these 21,000 were sighted), 23,300 people read books in braille, i.e. 65% of those who know the system. Eighty thousand people have listened to talking books. In relation to 1974 the number of listeners of talking books has increased almost by 12,000.

"As far as the abandonment of braille is concerned, it is a problem that lies beyond the limits of this paper and which needs an urgent and thorough analysis. . . .It is not at all conclusive that the system of Louis Braille is completing its historic mission. . . .The possibilities of this system are far from being fully exploited. . . .

". . .The practical solution of the tasks of the rehabilitation and education of the blind, bearing in mind the specific demands of present time, should be supported by a deep knowledge of the peculiarities of each category of blind people, peculiarities which are even more varied than the ones one can observe among sighted people.

"Considering the specific character of this work due to differences resulting from the onset of blindness, the nature and degree

of visual impairment, the compensation task for the various categories of blind people has to be conducted in different ways utilizing the most appropriate means for each category.

"This is why the success of the work will increasingly depend on the improvement of all the systems and methods used in the training of blind people for a useful and remunerative life based on the achievements of scientific and technical progress and of social development.

"The maximum utilization of educational guidance and of the compensation potentials of the braille system as well as of tape recorders and other technical means are some of the challenges derived from the present state of development.

"From a practical viewpoint the main feature of the development prospects of both types of literature for the blind is a stronger specialization of publications in accordance with the reader demands and with psychological and educational recommendations made by the scientists. The methodical, technical and typographical improvement of each type of book production is very important. We also are aware of the objective need to conduct further research to find new methods which could make possible a combination of both types of literature, offering the blind the chance to have at their disposal a book using the two systems, i.e. braille and recorded, taking into account the perceptive potentials of both braille and talking books as well as their information possibilities. The creation of such books, for instance for hand-books and textbooks, for those who learn a foreign language is entirely feasible and does not require any additional expenses.

"In many countries, including the Soviet Union, studies are being conducted along these lines. The international exchange in this field will contribute in our opinion to the promotion of our common cause.

"All that has been said so far confirms the view that braille and talking books are natural allies, which are destined to develop and complement each other."

Recent Experiments in Braille Reading

In his "Possibilities for Stimulating Learning and Reading Braille," John Lorimer of England commented that several studies have shown that the present English braille system and the methods involved in teaching braille represent, to a large extent, the reason for the worldwide reduction in braille reading.

Mr. Lorimer pointed out that "investigators in the United States of America have shown that much of English-speaking children's difficulty in learning and reading braille stems directly from the complexity of the contracted code and from certain of its features. The assignment of up to eight meanings to a symbol, the opportunities for reversal and inversion and for confusing upper with lower signs, and the use of short-form word signs infrequently occurring are among the structural features which are troublesome to many beginners, children and adults alike. Furthermore, frequency surveys carried out in Britain and the U.S.A. have revealed that many of the contractions contribute very little to space-saving. Their removal from the code would ease learning difficulty and the resulting increase of space would be almost imperceptible.

These weaknesses are probably characteristic in varying degrees of contracted codes used by other linguistic groups.

"There are those, usually the highly competent braille readers, who call for the addition of yet more contractions. However, research findings appear to indicate that any further revision of the code should be in the direction of reducing rather than increasing the number of contracted forms. There will be a point beyond which the addition of contractions will have no noticeable effect on saving space but will only increase learning difficulty and reading time.

"In Britain and elsewhere there is evidence of a growing belief that a simplification of the contracted codes now in use would be of advantage to readers and producers of braille. The desire for change, however, appears to spring from two rather different and possibly conflicting aims. Teachers regard simplification primarily as a means of reducing learning and reading difficulty whereas the printing houses will understandably tend to seek changes which will facilitate computer-controlled production. It is hoped that any change sought by computer programmers will be adopted only if it also has the approval of braille readers.

"Objective evidence which will support or refute the case for a simplified code is now being gathered in England. This is part of a research project on the braille code, extending the use of braille, and the improvement of reading skill which was very recently set up."

Mr. Lorimer continued with a description of three controlled experiments which compared reading speeds for the standard contracted

braille and various less contracted forms. The results showed that a system consisting of only 73 contractions occupied only 6 percent more space than a system with 190 contractions and slightly increased the reading speed.

Mr. Lorimer discussed new methods of teaching braille which apply proven speed-reading techniques for print. Experiments showed reading speed increases over a two-week period from 138 to 710 words per minute.

Mr. Lorimer finally explored improved methods for instructing recently blinded adults using scientifically developed self-teaching courses.

In his concluding remarks, Mr. Lorimer called for continued research in braille reading and related areas, with special attention to "the study and evaluation of different teaching approaches, consideration of the use of colour and embossed illustration to enhance the appeal of braille books, and research which would yield more precise information about the braille reading process."

In his opinion, braille would never be as efficient a reading medium as print, yet "the results of work done so far indicate not just the possibility, but the strong probability that braille reading will become easier to master and more widely accessible."

APPENDIX I

List of Participants

BELGIUM

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B-1060 Bruxelles

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CNOPS-VAN CALSTER María
Vlaamse Bibliotheek van de
Braille-Liga v.z.w.
G. Schildknechtstraat nr. 28
1020 Bruxelles

VANBEGIN Jan
PISTERS Gérard
Vlaamse Blinden Bibliotheek
J. Deschuyffeleerdreef, 61
1810 Wemmel

BRAZIL

FACCO Edno
Fundacao Para o Livro do Cego
no Brasil
Rua Dr. Diogo de Faria, 558
Sao Paulo

BULGARIA

KARAFESOV Spas
VESSELA BOYKIKEVA
Bulgarian Union of the Blind
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COLOMBIA

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31400 Toulouse

MALEYSSON Hilaire
Bibliotheque Braille Oecumenique
Quinquempoix
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Blinden-und-Sehschwachen-Verband
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102 Berlin

TSCHIRNER Siegfried
WEILANDT Lothar
Deutsche Zentralbücherei für Blinde
Gustav-Adolf-Str. 7
701 Leipzig

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38 Rachel Imenu St.
Jerusalem

ITALY

FORMIGONI Dario
FORMIGONI Mrs.
Biblioteca Italiana Per Ciechi
Monza (Milano)

VASSIO Guglielmo
VASSIO Mrs.
Corso Guilio Cesare 118
10154 Torino

MEXICO

COVO Ruth
Comité Internacional Pro Ciegos
Guanajuato 232
Mexico 1 D.F.

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Postbox 131
3850 AC Ermelo

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Kipstraat 54
3011 R. T. Rotterdam

ROSSKOPF Heleen
Library for the Blind
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Amsterdam

VANGRINSVEN Guillaume
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6500 KB Nymegen

DOVE H.
VAN VLIET R.
Dutch Library for the Blind
Zilhtenburglaan 260
The Hague

POLAND

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DE MIGUEL GIL Teresa
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Madrid-4

FUENTE ANDRES Dolores de la
Imprenta Nacional Braille
Prim, 3
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Baleares, 12
Madrid-19

GOMEZ DE LA TORRE Ramón
Jefatura de la O.N.C.E.
Jose Ortega y Gasset, 18
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GONZALEZ ALVAREZ Benilde
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MUÑOZ MERINO Elías
E.T.S.I.T.
Catédra Electrónica II-III
Ciudad Universitaria
Madrid-3

NAVARRO BELLOSO Fernando
General Primo de Rivera, 2
Barcelona-2

ESTEVE MARTI Jaime de
General Primo de Rivera, 2
Barcelona-2

ORTIZ HOJAS Angeles
Francisco Iglesias, 22 - 1º D
Madrid

GARCIA SORIA Fernando
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Madrid-28

VAZQUEZ GARCIA Pablo
Imprenta Braille
Pedro IV, 78-84 - 1º
Barcelona-5

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Obra Evangélica de Ayuda Espiritual
a los Ciegos
Trafalgar, 32
Madrid

PAJON MECLOY Enrique
Prim, 3
Madrid-4

DEL REY GARZON Luis
Pico de los Artilleros, 52 - 2ºA
Madrid-30

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General Mola, 264 - 3º D
Madrid-16

SACRISTAN VINCENTE Amando
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CHANSON Georges
Schweizerischer Blindenhorbucherei
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Melbourne House
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HYLAND Mrs.
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Stuart, Florida 33494

LOEWE Helene
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Library of Congress
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Washington, D.C. 20542

USSR

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BOGDANOVA Olga
Association des Aveugles de la Russie
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Moscow 103672

OVETCHKINA Nina
Bibliotheque Centrale Braille
Oranienbaume, 5
Leningrad

YUGOSLAVIA

DURETIC Jagoš
TRIVO Indjich
Filip Višnjić Institute for Publishing Activities
Ustanička br. 25/I
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11001 Beograd

LASTRIC Antun
DURO Sušnjić
Library for the Blind of Croatia
Draškovicéva ul. br. 80
41000 Zagreb

APPENDIX II

List of Exhibitors

BOOKS AND MATERIALS IN BRAILLE

CENTRE TOBIA
Universite Paul Sabatier
Toulouse
France

DEUTSCHE ZENTRALBUCHEREI FUR BLINDE
Leipzig
German Democratic Republic

ORGANIZATION NACIONAL DE CIEGOS
Spain

LIBRARY OF CONGRESS
Washington, D.C.
U.S.A.

LUTHERAN BRAILLE WORKERS, INC.
Yucaipa, California
U.S.A.

POLSKI ZWIAZEK NIEWIDOMYCH
Poland

ROYAL NATIONAL INSTITUTE FOR THE BLIND
United Kingdom

SOKEAIN KESKUSLIITTO r.y.
Finland

WARWICK RESEARCH UNIT FOR THE BLIND
University of Warwick
United Kingdom

MACHINES

CLARKE & SMITH
United Kingdom

Braille Terminal

DEUTSCHE BLINDENSTUDIENANSTALT
Marburg
Federal Republic of Germany

1. Modern stereotyping machine.
2. Copytherm device for vacuum embossing.
3. Device for the production of punch tapes; simple manipulation.

ELINFA
France

1. Digicassette
2. Two Digicalculators

DIPL.-ING. K. P. SCHONHERR
Stuttgart
Federal Republic of Germany

1. Braille-Display BD 80 for typewriters, memory typewriters and terminals.
2. Braillotron calculators TI-2550, TI-30, TI-41, SR 51, TI-59 Braille lines.

DIPL.-ING. K. P. SCHONHERR
Stuttgart
AID ELECTRONIC GmbH
Berlin

Braillocord BRS 76

F. H. PAPENMEIER-ELEKTRO-APPARATEBAU
Schwerte
Federal Republic of Germany

Braillex

SAGEM
France

A Braille Printer TEM-8 BR and a TEM-8 B2 machine.

TELESENSORY SYSTEMS, INC.
Palo Alto, California
U.S.A.

Display of Braille electronic storage device.

DIVISION FOR THE BLIND AND PHYSICALLY HANDICAPPED

THE LIBRARY OF CONGRESS

WASHINGTON, D.C. 20542

HENRY B. PARIS
ASSISTANT CHIEF FOR MATERIALS DEVELOPMENT

1291 Taylor Street, N. W.
Area Code 202-882-5500

TRIP REPORT
APRIL 9 - MAY 4, 1978

During the period from 9 April to 4 May I visited the following:

1. European Conference of the Directors of Braille Printing Houses, Madrid, Spain.
2. Printing House for the Blind, Madrid, Spain.
3. University of Madrid, Telecommunications Graduate Engineering School, Madrid, Spain.
4. Printing House for the Blind, Barcelona, Spain.
5. Library for the Blind, Barcelona, Spain.
6. Elinfa Research and Development Laboratory, Paris, France.
7. Essilor Production Facilities, Barleduc, France.
8. Valentin Hauy Institute for the Blind, Paris, France.
9. Printing House for the Blind, The Hague, Netherlands.
10. Library for the Blind, Amsterdam, Netherlands.
11. Royal National Institute for the Blind, London, England.
12. University of Warwick, Research Unit for the Blind, Warwick, England.
13. Encoded Braille Standardization Meeting, Paris, France.

A separate report has been prepared on the European Conference of Directors of Braille Printing Houses. Because of the diverse nature of the remainder of the trip, this report will be divided into the following comprehensive sections:

1.) Status of braille production technology in Europe.
2.) Music braille in Europe.
3.) Status of braille reading machine developments.
4.) Possibilities of exchanges and assistance between LC

and European organizations.

5.) Recommendations.

STATUS OF BRAILLE PRODUCTION TECHNOLOGY IN EUROPE

I visited the major printing houses of Spain, France, Netherlands and England. Most have the vestiges of ancient braille production machinery and methods alongside of various types of modern, automated machinery, in varying states of implementation. With one exception (Netherlands Printing House in The Hague), I was left with the impression that there has not been much real system design of the automated systems, and that the result will probably be an increased cost of braille production over the older methods. The modern systems permit sighted operators using standard computer terminals to enter books into the system and then use the computer to assist in editing and in translation to either grade I or grade II braille. Finally, the system provides either a print or braille copy for proof reading. Correction of errors is facilitated by a computer editing, or word processing program. The final proofed production can be either automatically embossed zinc plates to use for paper braille press production, or directly produced paper braille on an LED 120 or a SAGEM type paper embosser. This process is smooth and fast but generally requires a substantial investment in a computer and peripheral hardware, not to mention usually a more skilled, higher salaried operator. As currently used these systems increase the cost of braille production because the text is manually entered into the system via a keyboard; a process taking 10 to 15 days for a 250,000 character novel.

Only at The Hague have they addressed the full system problem in an attempt to develop a process that reduces the cost of braille production. This obviously requires the elimination of the manual input of the book. Dr. Van Vliet at The Hague has developed a system which has now successfully produced 30 books by automatically entering the books into the computer from the magnetic tapes prepared by the book publishers in the process of composing the print books. The process of translating these tapes from print text and layout, to braille text and layout, is basically simple, and there are good existing computer programs for performing the task. The publishers, or compositors, tapes contain endless text (no line or page differentiation in the text), with the publisher's layout code mixed within the text. The code indicates lines, paragraphs, pages, italics, etc., but are clearly distinguished, and easily removed, from the text by computer. A program to use the tapes for braille production removes the print layout codes and inserts braille layout codes. A different code table is required for each publisher, but once the program and tables are prepared, a typical 250,000 character

novel can be entered into the computer and translated to braille in 20 minutes. The rest of the process of proofing and correcting is identical to the manually entered automatic system.

The use of compositor tapes is the key to reduced braille production cost and it is surprising to see this essential element ignored in most European automation implementations. (The same problem exists in the U.S.)

All of the printing houses use the same general types of braille embossing presses; one type for high volume, and another for low volume production. Even RNIB is phasing out the deposited plastic dot system in favor of returning to embossed paper braille.

Most of the printing houses have the facilities for hand stitching hard bound covers; however, the ring binding system used by RNIB (similiar to APH) appears much more practical and economical.

To my knowledge, England and the U.S. are the only countries to exclusively employ grade II braille, and interestingly, both countries complain of low braille book circulation. Other countries (Netherlands, Germany, France, Spain), use only grade I braille (or a slightly contracted version) and claim increased circulation and interest as a result. Warwick University, England, is conducting a study to determine the optimum braille code (a compromise between grade I and II) in terms of scope of interest, reading speed, and comprehension. They are also preparing revised braille code instruction courses for older people; however, the results of both the study and the instructions are still 2 years off. We should conduct a simultaneous coordinated study in the U.S. so that the results are applicable to our specific reader population.

MUSIC BRAILLE IN EUROPE

Translation of music into braille requires a combination of both music and braille skills which are relatively rare in the world. At Valentin Hauy, in France, which has a considerable braille music reputation, there is only one braille music translator. In all of France there are only five.

There are at least two research programs in Europe addressing the problem of computer braille music translation directed towards reducing the degree of human skill required. One is at Toulouse University, France, and the other at Warwick University, England.

The Toulouse Research is under the direction of Monique Truquet. It is based upon information originally obtained from the American University in Washington, D.C. and will be operative in late 1978. Ms. Truquet is very willing to help us to get the program working in the U.S. when it is completed. She has had her research worker prepare a paper for us (in English) describing the program. I have supplied a copy to the DBPH Automated Systems Coordinator.

The other music translation program is at Warwick University under the direction of Dr. John Gill. His program will also be available late in 1978, so we will have the two to compare.

Both programs are reported to be able to produce more complex music than the predecessor American University Program. If successful, these programs seem to offer much needed aid to the production of music braille and should increase the world supply of this internationally exchangeable material.

STATUS OF BRAILLE READING MACHINE DEVELOPMENT

The following companies are in the process of developing machines with braille readout devices, or have indicated they intend to do so:

MACHINE	COMPANY	COUNTRY	STATUS
Brailink	Clark & Smith	England	Available for purchase
Braillex	Papermeier Electronics	Germany	Available for purchase
Braillocord	Aid Electronics	Germany	Available for purchase
Digicassette	Elinfa	France	Available for purchase
	Telesensory System, Inc.	USA	Under development
	University of Madrid	Spain	Development not started
	University of Osaka	Japan	Under development
		USSR	Development not started

All of these devices, some existing, some under development, and some only contemplated, are "read" and "write" machines targeted towards permitting the blind to interface with computers and otherwise expand their occupational opportunities.

Both the Braillex and the Brailink offer extensive storage and rapid search features and are the most versatile and sophisticated of all of the machines. Neither, however, is being planned as a small, low cost, "read only" device such as would be applicable to the DBPH program. The remaining producers have expressed interest in developing a potential "read only" device. Of these only two are currently available for purchase: the Digicassette and the Braillocord.

DBPH is preparing to evaluate both devices in terms of applicability to our braille book program. The Braillocord is a larger device than the Digicassette but still appears to meet the basic criteria for consideration. It is available with a two line, 40 character per line display, whereas the Digicassette "read only" device contains only a 20 character display. The question of readout length is one of the major parameters to be evaluated and has a strong influence upon both user acceptability and machine cost. Vito Proscia, of Telesensory Systems, Inc., informed me that TSI has conducted a computer analysis to study the effect of readout length upon the hyphenation of words. They have concluded from this that the optimum readout length is 32 characters. Of course there are many additional factors to be considered in the selection, but hyphenation is certainly one of them.

Despite differences in all of the devices they have many common features, and differ only in varying implementation of the same fundamental concepts.

The readout devices for example are mostly some form of static metal pins which are raised and lowered electrically to form braille cells. Some of the designers use solenoids while others use piezoelectric crystals, also the number of characters selected for the display length varies. The devices are read tactilely by moving the finger across the stationary pins. One notable exception to this is the machine proposed by Dr. Sueda of the Osaka University, Japan. He has developed his system independently of the European devices, and has arrived at some fundamentally different concepts. Notably the device uses an eight dot braille cell instead of a six dot cell, and the readout consists of a five character, vibrating pin, flowing braille display. With this display the reader's finger remains relatively stationary, while the braille flows past under his touch. Actually the finger can roam over the five character display.

Eventually there will apparently be a number of potential suppliers of braille reading machines which should tend to drive the cost of production units down.

Meanwhile it is important that we continue to pursue our plan to evaluate machines as replacements for paper braille. The Digicassette has already been evaluated in our laboratory as a suitable device for the generic test and my visit to the Elinfa R&D laboratories, and the production facilities (Essilor Company), was convincing that they are capable of producing a high quality product, in any quantity we would require, and of providing the type of technical support that will be required during a large scale user acceptability test.

The Braillocord should also be evaluated for potential use in the user acceptance test since it is a reading device, and it is apparently available for quantity purchase.

As for the availability of any other machines for the generic test, just judging from the period of time that the Digicassette has been in use, and the number of problems that they are still encountering, it seems highly unlikely that any of the devices which are still in either the contemplation or development stage will be ready for a full scale consumer test for at least another year. All producers will of course be potential suppliers if the tests indicate that we should procure large quantities of machines for our program.

A major difficulty in the evaluation will be the production of sufficient materials on magnetic tape to keep the evaluation moving. The use of compositors tapes for this application should be explored immediately with the publishers, together with the use of magazines extracted from the Clovernook Printing House computer.

The Encoded Braille Standardization meeting in Paris went quite well. All of the producers of braille machines appear willing to cooperate in developing a standard format for mapping braille onto magnetic tape. The potential standard is moving towards the criteria we proposed as a rebuttal to the one originally proposed by the committee. I have been asked to participate on the technical committee to prepare the standard and feel that it would be in our interest to be active in this area.

POSSIBILITIES OF PURCHASING FOREIGN LANGUAGE BRAILLE AND TALKING BOOKS

I visited five major braille printing houses and three libraries for the blind in Europe and had additional discussions with representatives of other countries.

A purpose of my trip was to arrange to obtain catalogs of braille books, braille music, and talking books; and to determine the mechanism for procuring materials from the catalogs; and to explore the possibility of having books of our selection produced by Foreign Printing Houses in their language, for our readers, preferably to our own specifications.

Exchange of catalogs is no problem and is currently in process. The possibilities of purchasing books either from the catalogs, or produced especially for us, presents a different problem in each country and they will be discussed individually. One condition common to all, however, is that we can not expect either very many titles, or very many copies, of any thing we order. All of the Houses are operating to capacity and are still not satisfying their national needs. Also, since their facilities are set up only to produce to their specifications, production to our specifications is out of the question.

SPAIN: A very cooperative attitude. The Madrid Conference was chaired by Pedro Zurita, a blind man who holds an important position in the Spanish Organization for the Blind, and commands at least five languages. He will coordinate all of our requests in Spain. A catalog exchange is in process for braille books, talking books, and music. Braille books can be purchased from the catalog in small quantities, and master tapes of talking books will be prepared to our format if we supply the blank tape. We should send one of our cassette machines and several sample books. There is a possibility that they would produce a few special books for us per year, but we should first obtain some from their catalogs for evaluation.

FRANCE: The Valentin Hauy is very cooperative and willing to request permission from the French Government to sell either braille books or talking books from their catalogs and even to produce a small quantity of our selection. However, the French copyright laws do not permit them to make more than twelve cassette copies of any book, and are very binding in many respects. Permission to provide copyright materials to a foreign government must be pursued by Valentin Hauy with the French Government. This action must be initiated by a formal request from us to have them supply us with a master in the case of cassette books. Braille books can be ordered from their catalog, but in small quantities. We should also send Valentin Hauy one of our cassette machines and some sample books. They are quite willing to cooperate but must go through the beaureaucratic system. All requests should be directed to Mr. Pierre Schneider-Maunoury, Secretary General, Valentin Hauy.

Valentin Hauy has an extensive music library but much of the music appears to be old and fragile and probably not available for loan. There are only five music translators in all of France and only one at Valentin Hauy. Their library grows very slowly.

Mr. Chaunin, head of braille music, will send all of the music catalogs from which we can request to purchase some of the newer materials. (This has been received and given to the Music Section.)

The most promising hope for braille music is the development of international computer translation programs which should be working by the end of this year at both Toulouse and Warwick Universities. (These are described in another section of this report.)

NETHERLANDS: The discussion of exchanges and purchases of braille books and talking books was not pursued here, and if the need arises, it may be very complicated since no copyright permissions are ever solicited. The Dutch Publishers have never voiced any objection and cooperate extensively by supplying them with compositors tapes, but exporting may create a different attitude.

Music exchange looks promising, however, and a music catalog exchange has been initiated.

ENGLAND: RNIB is eight months behind in filling their own orders and cannot take on any of our work. They will try to supply maybe nine or ten of the titles we requested but cannot fill most of the orders for at least a year. In the future if we place our order for newly announced books the first time the announcement is made, they will be able to provide us with all the copies we need because our order will be added to their own. They never stock more than a few of the catalog items, however, so when we order 50 copies it means a special reprint which they cannot provide now.

Representatives of Poland, Denmark and Israel were also very interested in exchanging catalogs in braille books, talking books, and music. All contacts for catalog and book exchanges will be given to the Collection Development Section for action.

CONCLUSIONS AND RECOMMENDATIONS

Historically there has been a wide technology gap between the talking book portion of our program and the braille portion, probably because talking books are used by a much larger segment of our readers than are braille books. We have devoted most of our

technical effort to addressing the complex technologies of cassettes and flexible discs and have benefited greatly from the rich technology of the music industry. As a result, in the talking book area we have assumed an acknowledged world leadership role. World braille book technology is now advancing in a somewhat uncoordinated manner and is in need of leadership and direction. My recommendation is that the Library of Congress has the expertise and the resources to provide considerable leadership in this area and should do so.

Specific recommendations are:

1) Immediately establish a working interface with the print book publishing industry to gain access to this source of technology. First to explore the availability and applicability of compositors tapes, and then to exploit other possible print book technologies.

2) Describe, with the possible assistance of AFB and APH, the major braille problems which need to be addressed. Using this description, convene a group of the world's researchers for the blind to define specific research projects for the next five years and identify methods for coordinating worthwhile research. Indications are that the Fall of 1978 would probably be the earliest such a group of researchers could be assembled.

3) Coordinate a U.S. contracted braille study with the one being conducted by Warwick University to find an improved braille code between grade I and grade II.

4) Continue the braille reading machine user evaluation plan using the Digicassette. Also evaluate a Braillocord to determine if it should also be involved in the user evaluation.

5) Actively participate in the Technical Committee to establish international standards for encoding braille on magnetic tape.

6) Continue to monitor the braille music translation computer program developments and consider possible implementations of the program in the U.S.

Being circulated with this report are materials collected during my journey concerning places and products related to braille production.

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